REMARKS

Claims 1-31 were appealed and are rejected in the above-identified Office Action ("Action"). Applicant disagrees with the rejection of the claims and seeks reconsideration thereof.

Applicant amends claims 9, 13, 17 and 26 and submits that no new matter is added herein. Amended claim 9 is supported at least at paragraph 14 of the specification; amended claim 13 is supported by paragraphs 14, 21, 31-33, and Figures 2 and 4 of the application; amended claim 17 is supported at least by paragraphs 14, 20-23, and Figure 5 of the application; and amended claim 26 is supported such as noted above for claim 17. Applicant submits additional claims 32-46, which are supported at least at paragraphs 14, 20-23, and 30 and Figure 2 of the application.

I. Claim Rejections – 35 U.S.C. §112, first paragraph

In the outstanding Action, the Examiner rejects claims 1-31 under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. Specifically, the Examiner alleges the terms "volatile" and "non-volatile" have been used extensively in the specification without defining the meaning of the terms within the scope of the invention. The examiner states these terms are already associated with memory devices within the memory arts and cannot be used appropriately as claimed. Applicants respectfully traverse the rejection for at least the following reasons.

First, the examiner has not identified how these terms are used in another art; or what any inconsistent, contrary, different or confusing meanings are for any these terms as used in the claims as compared to such use in another art. Second, the terms noted above are clearly defined in the specification (e.g., without limitation thereto see paragraphs 14, 20-23, and Figures 3 and 5 of the application; and additional claims 32-34). Third, the examiner appears to understand their meaning clearly as the examiner has issue a section 102 rejection. Fourth, upon reading the specification, a practitioner would understand the meaning of those terms and find the claims enabled without undue experimentation. Applicant points out that although the examiner

appears confused by the "undue experimentation" standard because the examiner did not used it as a basis for lack of enablement (see p. 13 item 22 of the current rejection), this standard is still the rule of law for enablement. In particular, the focus of the examination inquiry on the issue of enablement is whether the specification teaches "those skilled in the art how to make and use the full scope of the claimed invention without 'undue experimentation'." See MPEP §2164.01 and §2164.08 citing *In re Wright*, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993).

Applicants respectfully submit, the rejection on this basis should be withdrawn at least for the reason that the Examiner has not established that claims 1-31 fail to satisfy the enablement requirement. The enablement requirement "is separate and distinct from the description requirement" and requires that the specification describe how to make and use the invention. See MPEP §2164. The Examiner must consider many factors when determining whether the disclosure satisfies the enablement requirement and must further assess whether any necessary experimentation is "undue." See MPEP §2164.01(a). These factors include: (1) the breadth of the claims; (2) the nature of the invention; (3) the state of the prior art; (4) the level of one of ordinary skill in the art; (5) the level of predictability in the art; (6) the amount of direction provided by the inventor; (7) the existence of working examples; and (8) the quantity of experimentation needed to make or use the invention based on the content of the disclosure. See MPEP §2164.01(a).

As pointed out by Applicants in previous responses and briefs, the terms "volatile" and "non-volatile," whether used in the computer art or any other art, are adjectives used to modify the noun they are used in conjunction with. For example, when the term "volatile" is used in the context of a cache line or segment in the phrase "modified volatile state", as it is in the instant application, it indicates the volatility or changeability of the cache line or segment. See, for example, page 7, paragraph [0020] of the application. Such use of the term "volatile" is not inconsistent with the ordinary meaning of this term.

Nevertheless, the Examiner alleges these terms have long established definitions tied to hardware used for memory and Applicants' use of the terms to identify the state of a cache line or segment is outside of the given practice. In support of her position, the Examiner provides

several technical definitions for phrases such as "nonvolatile memory," "nonvolatile RAM," "nonvolatile storage," "volatile memory" and "volatile storage." Certainly when the terms "volatile" and "non-volatile" are used in conjunction with nouns such as "storage" or "memory" these terms are tied to memory hardware or media. In addition, if the definitions of these terms are reviewed, it can be seen that even in the context of memory or storage, the terms "volatile" or "non-volatile" are used to indicate the changeability or volatility of data within the memory. For example, in the dictionary *Microsoft Press, Computer Dictionary, Third Edition*, referenced by the Examiner, the term "volatile memory" is defined as "Memory used by a program that can change independently of the program, such as memory shared by another program or by an interrupt service routine" (emphasis added). Applicants respectfully note, the definitions previously cited by Applicants, such as the definition for "volatile variable" in the context of programming variables, are further consistent with this meaning. For example, the term "volatile variable" is defined as "a variable in computer programming which can be modified by processes other than the program" (emphasis added). See, the definition for "volatile variable" found at the website www.dictionary.com attached to the previous response.

In any case, Applicants respectfully note, the terms "volatile" and "non-volatile" are not used in Applicants' specification and claims in phrases such as those the Examiner provides definitions of. Instead, these terms are used in phrases such as, for example, "modified volatile state" and "exclusive volatile state" to indicate a state of the corresponding cache line. In addition, the phrases "non-volatile segment" and "volatile segment" are used to indicate the volatility of segments of the cache line. For example, "non-volatile segment" is used to indicate that if the segment is modified or changed by the owning processor or device the segment may generate a notification to sharing processors to ensure that the coherency of the non-volatile data held in caches of a computer system are maintained and the phrase "volatile segment" is used to indicate that a segment contains data that may be modified or changed by the owning processor without notice to other processors. See, for example, additional claims 32-46; and Application, page 7, paragraph [0020]; page 8, paragraphs [0021]-[0023]; page 10, paragraph [0030]; Figures 3 and 5. In view of the foregoing, one of ordinary skill in the art would understand the use of the terms in this context as referring to the changeability or volatility of the content of the cache line or segment of data. Thus, Applicants are using the terms entirely not inconsistent with their

ordinary and customary meanings attributed to them by one of ordinary skill in the art. Since the meaning of the terms "volatile" and "non-volatile" are clearly defined within the scope of the present invention, Applicants believe claims 1-31 are in compliance with 35 U.S.C. §112, first paragraph and therefore the rejection on this basis should be withdrawn.

For the foregoing reasons, Applicants respectfully request withdrawal of the rejection of claims 1-31 under 35 U.S.C. §112, first paragraph.

III. Claim Rejections – 35 U.S.C. §112, second paragraph

In the outstanding Action, the Examiner rejects claims 1-31 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. Specifically, the Examiner alleges the claim language uses the terms "volatile" and "non-volatile" in conjunction with cache lines and cache line segments without adequately providing meanings within the specification for this use of the terms. The Examiner also alleges that the claim language uses the following terms "modified volatile", "exclusive volatile" and "shared volatile" while the specification fails to clearly redefine the terminology.

As previously discussed, the meaning of the terms "volatile" and "non-volatile" in the context of the cache lines and cache line segments are not inconsistent with the plain meaning of the terms, and are clearly defined in the specification. Thus, there is no ambiguity or confusion as to the scope of the language or the meets and bounds of the claims. Accordingly, claims 1-31 are in compliance with 35 U.S.C. §112, second paragraph. For the foregoing reasons, Applicants respectfully request withdrawal of the rejection of claims 1-31 under 35 U.S.C. §112, second paragraph.

II. Claim Rejections – 35 U.S.C. §102

Claims 1-31 are rejected under 35 U.S.C. §102(b) as being anticipated over U.S. Patent No. 5,822,763 issued to Baylor et al. (Baylor). It is axiomatic that to be anticipated every limitation of a claim must be disclosed in a single reference.

Applicants respectfully disagree with the rejection above and submit that independent claim 1 is patentable over the cited reference for at least the reason that the reference does not disclose maintaining a cache line in one of a modified volatile state and an exclusive volatile state, as required by amended claim 1.

Baylor describes that when a processor attempts to over-write a word in a cache, a write request signal is sent to a global directory, and each other processor whose cache serves a copy of the line is notified of the request, so that only after each other processor has responded within an acknowledgement, can the first processor proceed with the write (the abstract and columns 2-6). However, claim 1 requires maintaining a cache line in one of a modified volatile state and an exclusive volatile state, such as, without limitation thereto, described at paragraphs 20, 22-23, and 26-30 of the application. For example, without limitation thereto, a cache line in one of a modified volatile state and an exclusive volatile state may include some non-volatile segments that when modified require notification to other processors, as well as some volatile segments that can be modified without notification to other processors (e.g., see claims 32-36).

In addition to the reasons above for allowance of claim 1 from which claim 2 depends, Applicants submit that claim 2 is allowable for at least the reason that the cited reference does not disclose modifying at least a portion the first segment of the cache line; and sending a notification of the modification, as required by claim 2. Baylor does not describe modifying a sub-line, or sending notification of a modification of a sub-line, but only teaches writing over an entire cache line (see col. 4 lines 6-29).

Similarly, Applicants respectfully disagree with the rejection above and submit that independent claims 9, 17, 21, 26, and 29 are patentable over the cited reference for at least the reason that the reference does not disclose a cache line having one of a modified volatile, exclusive volatile, and shared volatile state, as required by those claims as amended. An argument analogous to the one above for claim 1 applies here as well.

Applicants respectfully disagree with the rejection above and submit that independent claim 13 is patentable over the cited reference for at least the reason that the reference does not disclose a cache line having a shared volatile state, as required by that claim. As noted above regarding claims 1 and 2, Baylor does not teach such a state for a cache line.

Other dependent claims are submitted as being patentable for at least the reasons provided above in support of their independent base claim, as well as the additional limitations of each dependent claim.

For the foregoing reasons, Applicants respectfully request withdrawal of the rejection of claims 1-31 under 35 U.S.C. §102.

IV. Additional Claim 32-46

Applicants submit that additional dependent claims 32-46 are allowable as not being anticipated or obvious for at least the same reasons given in support of base claims. In addition, Applicants submit that dependent claims 32-46 are patentable over the cited references for at least the additional limitations of each of dependent claims 32-46.

CONCLUSION

In view of the foregoing, it is believed that all claims now pending, namely claims 1-46, are now in condition for allowance and such action is earnestly solicited at the earliest possible date. If there are any additional fees due in connection with the filing of this response, please charge those fees to our Deposit Account No. 02-2666. Questions regarding this matter should be directed to the undersigned at (310) 207-3800.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: 12/10/07

Angelo J. Gaz 45,907

1279 Oakmead Parkway
Sunnyvale, California 94085-4040
Telephone (310) 207-3800
Facsimile (408) 7208383

CERTIFICATE OF MAILING

I hereby certify that this paper is being deposited with United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop Amendment, Patent and Trademark Office, Commissioner for Patents, Post Office Box 1450, Alexandria, Virginia 22313-1450.

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